

L 1614-66

ACCESSION NR: AP5021662

lic manganese in the initial mixture (heating at 1000-1150 C for 15 hours), with slow cooling as well as with rapid quenching, a mixture of MnB_2 and metallic boron was obtained. The fusion temperatures of the system are shown graphically. Specific density of the borides was as follows: Mn_2B -7.21, MnB -6.35, Mn_3B_4 -5.95, and MnB_2 -4.90. With oxygen, noticeable oxidation of the manganese borides started at 600C, while with nitrogen, nitriding started at about 700C. With carbon, signs of carbonization of the borides were observed at 1500C only for Mn_2B . For the other borides, no carbide phases were observed even at 1800C. However, in contact with carbon at high temperatures, all the borides are transformed into the monoboride phase MnB , evidently the most stable in this medium. The experimental results are found to be in good agreement with the results of investigations of the hydrolytic stability of manganese borides, as well as of borides of other transition metals. Orig. art. has: 3 figures and 5 tables

ASSOCIATION: Gosudarstvennyi institut prikladnoi khimii (State Institute of Applied Chemistry)

SUBMITTED: 27 May 63

NR REF SOV: 006

Card 2/2

ENCL: 00

OTHER: 016

SUB CODE: MM, GC

ACC NR: AP7004395

SOURCE CODE: UR/0226/67/000/001/0037/0039

AUTHOR: Markovskiy, L. Ya.; Bezruk, Ye. T.

ORG: State Institute of Applied Chemistry, Leningrad (Gosudarstvennyy institut prikladnoy khimii).

TITLE: Micromethod for determining the melting points of refractory compounds

SOURCE: Poroshkovaya metallurgiya, no. 1, 1967, 37-39

TOPIC TAGS: refractory compound, melting point, test method, micromethod

ABSTRACT: A description is given of a new micromethod for determining the melting points of refractory-compounds on small test pieces measuring 2—3 mm. The method is a variation of the Galakhov method and makes it possible to measure melting points in an inert medium at temperatures up to 2500 C. The heater is a tube made of tungsten foil. The method has been tested on a number of compounds with known melting points. Orig. art. has: 1 figure and 1 table. [Authors' abstract]

[AM]

SUB CODE: 11/SUBM DATE: 09Aug66/ORIG REF: 005/OTH REF: 001/

Card 1/1

L 11613-66 EWT(m)/EWP(e)/T/EMP(t)/ETI LRP(c) JD/JG/AT/AT	
ACC NR: AP6008263	SOURCE CODE: UR/0080/66/039/002/0258/0265
AUTHOR: Markovskiy, L. Ya.; Bezruk, Ye. T. 60 59 B	
ORG: State Institute of Applied Chemistry, Leningrad (Gosudarstvennyy institut prikladnoy khimii) 21 21 21	
TITLE: Boron carbides of manganese	
SOURCE: Zhurnal prikladnoy khimii, v. 39, no. 2, 1966, 258-265	
TOPIC TAGS: boron compound, manganese compound, crystal lattice structure, ferromagnetic material, CARBIDE, INORGANIC SYNTHESIS	
ABSTRACT: The present work is a continuation of the authors' earlier investigations of the synthesis of boron carbides of manganese (cf: ZhPKh, XXXV, 491, 1962; XXXVIII, 8, 1677, 1965). Mn_7BC_2 (I) and Mn_8BC (II) can be synthesized from their respective elements, from the reaction of manganese borides with carbon and manganese carbide, or from the reaction of manganese carbide with boron and boron carbide. (I) appears in the form of needle-like crystals in microphotographs and has a light gray metallic color. It has a specific gravity of 7.43, is ferromagnetic (specific electrical resistance is $1 \cdot 10^{-3} \Omega/cm$), and is thermally stable up to 2000° . Synthesis of (I) occurs in the temperature range $1150-2000^\circ C$. (II) consists of gray crystals with an appearance similar to (I). (II) has a specific gravity of 7.33, is not ferromagnetic (specific	
Card 1/2	UDC: 546.711'27'261

ACC NR: AP6008263

electrical resistance is $6 \cdot 10^{-4} \Omega/\text{cm}$), and at temperatures higher than 1300°C , (II) is converted into (I). Synthesis of (II) occurs in the temperature range of $1150-1300^\circ\text{C}$. Both (I) and (II) are markedly unstable in cold water, decomposing to gas and organic liquid products. The authors thank Yu. D. Kondrashev for calculating the lattice parameters for Mn_7BC_2 . Orig. art. has: 8 tables, 2 figures.

SUB CODE: 11,20/

SUBM DATE: 24Jul64/

ORIG REF: G07/

OTH REF: 008

Card 2/2 af

AUTHOR: Bezrukavnikov, V., Foreman of Industrial **Training** SOV-27-58-10-24/31

TITLE: From Experience Gained in Working in Methodical Commissions
(Iz opyta raboty metodicheskikh komissiy)

PERIODICAL: Professional'no-tekhnicheskoye obrazovaniye, 1958, Nr 10,
p 31 (USSR)

ABSTRACT: The primary task of methodical commissions is to help teachers and foremen of the industrial education to produce qualified workers for different branches of industry. Until 1957, these commissions existed only on paper, and since they have been in operation, they have been very helpful. Special seminars were organized where the teaching staff was acquainted with latest developments of technics.

ASSOCIATION: Tekhnicheskoye uchilishche Nr 1, Lipetsk (The Technical School Nr 1, Lipetsk)

1. Personnel—Training

Card 1/1

L 05530-67 EWT(m)/EWP(1)/ETI IJP(c) JD/JG

ACC NR: AP6030019

SOURCE CODE: UR/0020/66/169/005/1075/1076

AUTHOR: Bezrukov, V. I.; Lapitskiy, A. V. (Deceased); Klimov, V. V.; Kisel', N. G.

ORG: Donets Branch of the All-Union Scientific Research Institute for Chemical Reagents and High Purity Compounds (Donetskiy filial vsesoyuznogo nauchno-issledovatel'skogo instituta khimicheskikh reaktivov i osobo chistyykh veshchestv)

TITLE: Heteroniobates of rare earth elements of the cerium- and yttrium subgroups

SOURCE: AN SSSR. Doklady, v. 169, no. 5, 1966, 1075-1076

TOPIC TAGS: niobate, niobium compound, cerium, yttrium, rare earth element

ABSTRACT: Interaction between the aqueous solutions of potassium niobate with the salts of rare earth elements was studied by nephelometric technique. It was found that at the neutral point $\text{Me}(\text{OH})(\text{NbO}_3)_2$ is formed; Me is a rare earth element. The water-soluble complex of heteroniobates are formed upon dissolving of the $\text{Me}(\text{OH})(\text{NbO}_3)_2$ in the excess of potassium niobate. It was found that the breaking point on the transparency curve corresponds to $\text{Me:Nb}=1:2$. It was also found that $\text{Me}(\text{OH})(\text{NbO}_3)_2$ precipitates at $\text{pH}=6$ and that it dissolves at $\text{pH}=9.2-9.5$ and the Me:Nb ratio is $1:9$. Two types of thermal effects, endothermic and exothermic, were observed in the curve of calcination of the heteroniobates of the rare earth elements. The general formula of these heteroniobates was found to be $3\text{K}_2\text{O} \cdot \text{Me}_2\text{O}_3 \cdot 4\text{Nb}_2\text{O}_5 \cdot (17.9-19.8)\text{H}_2\text{O}$. It was also

UDC: 546.651'882+546.66'882:541.49

Card 1/2

L 05830-67

ACC NR: AP6030019

found that 70% of the crystalline water is lost upon heating to 100-180°C. Final dehydration occurs at 560-610°C. The dehydration was found to be partially irreversible. Presented by Academician I. I. Chernyayev on 14 December 1965. Orig. art. has: 1 table. D

SUB CODE: 07/

SUBM DATE: 21Sep65/

ORIG REF: 007/

OTH REF: 002

Card 2/2 *egk*

BEZRUKAVNOVA, L.I., kand.ekonom.nauk, red.; ZHYDER, N.B., prof., red.;
LOPATKINA, V.S., dotsent, red.; TSYPKIN, A.L., prof., red.

[Problems in the development of collective farming at the present stage] Nekotorye voprosy razvitiia kolkhoznogo stroia na sovremennom etape; sbornik statei. Saratov, 1960. 166 p.
(MIRA 14:4)

1. Saratov, Yuridicheskiy institut.
(Collective farms)

BEZRUKIKH, D.G., inzhener; SEZEMIN, P.I., inzhener.

Transportation of furniture in standard packing cases. Der.1 lesokhim.
prom. 3 no.5:3-5 My '54. (MLBA 7:6)

1. Trest Litmebel'. (Furniture--Transportation) (Boxes)

BEZRUMIKH, D.G.

Furniture components made from compressed wood. Der.prom. 10 no.1:
19 Ja '61. (M A 14:2)

1. Krasnodarskiy sovmarkhoz.
(Furniture)

(Wood, Compressed)

BEZRUKIKH, D.G.

Concentration and specialisation of the furniture and woodworking enterprises in Northern Caucasus. Der. prom. 13 no.7:1-4 J1 '64.
(MIRA 17:11)

1. Upravleniye mebel'noy i derevoobrabatyvayushchey promyshlennosti Severo-Kavkazskogo soveta narodnogo khozyaystva.

BEZRUKIKH, P.

How to determine size of the earth by from a globe. Geog. v
shkole 24 no. 1:65-67 Ja-F '61. (MIRA 14:2)

1. 182-ya shkola Moskv. (Earth—Figure) (Globes)

BEZHUKIKH, P.

Analysis of the fulfillment of basic plan indexes by supply and
sale organisations. Fin. SSSR 16 no.2:70-77 F '55. (MLRA 8:1)
(Marketing--Finance)

BEZRUKIKH, P.

Unification of report indexes of state procurement organizations.
Bukhg. uchet. 15 no.11:5-11 N '56. (MLRA 9:12)

(Produce trade--Accounting)

BEZRUKIKH, P.

Shortcomings of a good book ("Bookkeeping at grain receiving stations" by L.M. Belen'kii, I.A. M. Shapiro, B.M. Iakovlev. Reviewed by P. Bezrukikh). Muk.-elev. prom. 24 no.7:32-3 of cover JI '58.
(MIRA 11:10)

1.Ministerstvo finansov SSSR.

(Grain trade--Accounting)

(Belen'kii, I.M.) (Shapiro, I.A.M.)

(Iakovlev, B.M.)

BEZRUKIKH, P.; RABINOVICH, M.

Analysis of 1959 annual reports and balances is an important means
for bringing out hidden potentialities. Fin. SSSR 21 no.1:25-31
Ja '60. (MIRA 13:1)

(Financial statements)

VOROB'YEV; MAKSIMOV; BEZRUKIKH, P.

Replies to the editors. Sots. trud 7 no.9:145-146 S '62.
(MIRA 15:9)

1. Zamestitel' predsedatelya pravleniya Gosudarstvennogo banka SSSR (for Vorob'yev). 2. Zamestitel' nachal'nika otdela truda i zarabotnoy platy Gosplana SSSR (for Maksimov). 3. Nachal'nik upravleniya bukhgalterskogo ucheta i otchetnosti Ministerstva finansov SSSR (for Bezrukikh).

(Wages)

L 22583-66

ACC NR: AP6012932

SOURCE CODE: UR/0104/65/000/007/0040/0044

AUTHOR: Bezrukikh, P. P. (Engineer); Musatov, G. T. (Engineer); Gvozdev, Ye. I. (Engineer); Gesse, B. A. (Engineer)

ORG: none

TITLE: New method of forming ion-excitation mercury valves for the Bratsk power station

SOURCE: Elektricheskiye stantsii, no. 7, 1965, 40-44

TOPIC TAGS: power plant component, valve, mercury rectifier, electronic circuit

ABSTRACT: A new circuit for forming (pre-heating) the anodes of the mercury valves used in the rectifiers of power stations is presented. The essential differences between old and new circuits are the presence of an automatic former and current limiting resistance. The primary advantage of the new circuit is its ability to provide automatic transition from pre-heating to operating conditions without breaking the main circuit. No changes in the main circuit of the system are required. Safety of operation is also increased. Orig. art. has: 4 figures and 1 table. [JPRS]

SUB CODE: 10, 09 / SUBM DATE: none

Card 1/1 *g u*

UDC: 621.314.652

L 34740-66

ACC NR: AP6025233

SOURCE CODE: UR/0104/66/000/006/0043/0048

AUTHOR: Bezrukikh, P. P. (Engineer); Pokrovskiy, S. N. (Engineer)

Orig: none

TITLE: Tests of the ion excitation system in the hydroelectric generators at the Bratsk hydroelectric power station

SOURCE: Elektricheskiye stantsii, no. 6, 1966, 43-48

TOPIC TAGS: hydroelectric power plant, electric generator, magnetization, turbine

ABSTRACT: The paper is a report on the adjustment and testing of 16 units for ion excitation of the hydroelectric generators at the Bratsk Hydroelectric Station (ARMNV-1000Kh6M mercury converters). The following table gives times for quenching the rotor field of the main generator and magnetization currents for the static phase generator in the acceleration group for three sets of operating conditions.

Generator Number	No - load $I_d = 800a$		Nominal conditions $I_d = 1600a$	Accelerated $I_d = 3200a$ after limiting	
	Time for quenching the rotor field of the main generator, sec	Magnetization current for the static phase regulator in the acceleration group ma		Time for quenching the rotor field of the main generator, sec	Magnetization current for the static phase regulator, in the acceleration group ma
					at start of acceleration

Card 1/3

Card 1/3

0970 0000

L 34740-66

ACC NR: AP6025233

1	0.7	280	1.14	-	1 860	700
2	0.7	250	1.12	-	-	-
3	0.66	310	0.82	-	1 840	1 000
4	0.66	260	0.82	-	1 400	-
5	0.68	310	1.08	-	1 840	900
6	0.74	230	1.20	1.62	1 900	870
9	0.88	300	1.12	1.53	1 780	740
10	0.74	330	1.14	1.76	1 920	780
11	0.66	320	1.0	1.26	1 920	780
12	0.64	290	1.02	1.68	1 820	770
13	0.67	-	0.88	1.13	-	-
14	0.73	320	1.13	1.8	2 000	900
15	0.70	360	1.06	1.56	1 800	760
16	0.62	410	1.06	1.46	1 960	930
17	0.56	-	0.90	1.16	1 600	830
18	0.60	490	0.91	-	1 950	960

The wide variation in quenching times is due to the variations in adjustment of the regulators for excitation of the auxiliary generators, differences in the idling speed of the turbines, temperature variation during adjustment of the rotors and difference in rotor current. The changes made in the system on the basis of the test data are discussed. It was found that manual control of the

Card 2/3

L 34740-66

ACC NR: AP6025233

ion excitation system is not reliable due to frequency and voltage drift in the characteristics of the static phase regulator. Automatic vacuum regulation puts the ion excitation system for the hydroelectric generators at the Bratsk Hydroelectric Power Station on a level where they may compete successfully with other types of excitation systems. In addition to the authors, Engineers of OATN Electric Network Project Yu. V. Artem'ev, O. V. Artem'yeva, L. A. Bezrukikh, V. I. Pokrovskaya, N. V. Chizhova, and G. T. Musatov took part in the adjusting of the ion excitation of the hydroelectric generators of the Bratsk GES. Orig. art. has 6 figures and 1 table. [JPRS: 36,741]

SUB CODE: 10,09,20/ SUBM DATE: none /

Card 3/3 BLG

L 31316-66

ACC NR: AP6021657

SOURCE CODE: UR/0104/66/000/004/0056/0060

AUTHOR: Bezrukikh, P. P. (Engineer); Pokrovskiy, S. N. (Engineer)

ORG: none

TITLE: Experience in adjusting ion excitation at the Bratskaya Hydroelectric Station

SOURCE: Elektricheskiye stantsii, no. 4, 1966, 56-60

TOPIC TAGS: ion, hydroelectric power plant, electric generator, electronic circuit, electric current, ion energy, power generating station

ABSTRACT: A report on a series of investigations conducted at the Bratskaya Hydroelectric station, designed to determine the actual angles of control, commutation angles, and to construct diagrams of current and voltage of the principle operating states of a generator operating with two groups of ion-excitation valves, connected to the rotor of the generator with a three-phase bridge circuit. The source of power is a secondary generator on the same shaft with the main generator. Operating states of the valves are described. Oscillograms are presented showing the voltage and current curves for the three main operating states of the generator. Orig. art. has: 8 figures. [JPRS]

SUB CODE: 10, 09, 20 / SUBM DATE: none

Card 1/1 *g*

UDC: 621.3.013.8:621.313.322-82

BELOUSOV, M.S.; POKLADA, I.I., prof.; BEZRUKIKH, P.S.; BARNGGL'TS,
S.B.; ZLOBINA, P.P.; GRIGOR'YEVA, S.T.; MEDVEDEVA, R.,
red.; TELEGINA, T., tekhn. red.

[A course in accounting] Kurs bukhalterskogo ucheta. 2.,
perer. i dop. izd. Moskva, Gosfinizdat, 1963. 488 p.
(MIRA 16:11)

(Accounting)

BEZRUKIKH, P.S., red.; IVANOV, N.N., red.; ZABOROV, Ya., red. izd-va;
~~TELEGINA, T., tekhn. red.~~

[Organization of standard accounting in enterprises] Organizatsiia normativnogo ucheta na predpriatiakh; sbornik statei. Moskva, Gosfinizdat, 1963. 193 p.

(MIRA 16:11)

1. Starshiy konsul'tant Upravleniya bukhgalterskogo ucheta i otchetnosti Ministerstva finansov SSSR (for Ivanov).
(Accounting)

L 00977-67 PSS-2/ENY(1)/T20 TT/GW

ACC NR: AP6032856

SOURCE CODE: UR/0020/66/170/003/0570/0573

AUTHOR: Gringauz, K. I.; Bezrukikh, V. V.; Khokhlov, M. Z.; Musatov, L. S.;
Remizov, A. P.

ORG: none

TITLE: Indications that the moon traverses the Earth's magnetosphere tail,
according to data from charged-particle traps placed on the first artificial lunar
satellite

SOURCE: AN SSSR. Doklady, v. 170, no. 3, 1966, 570-573

TOPIC TAGS: magnetosphere, lunar orbit, lunar satellite, *EARTH MAGNETIC FIELD*

ABSTRACT: Luna-10 carried two flat four-electrode charged-particle traps which monitored the flux intensity of electrons with energies exceeding 70 ev and positive ions with energies greater than a quantity determined by the second grid voltage, which was varied from 0 to +50 v once every two minutes. During the measurement sessions, the trajectory of the moon and its artificial satellite was such that it crossed the boundaries (as proposed by N. F. Ness) of the Earth's magnetosphere. During this time the measured difference of electron ($E < e > 70$ ev) and positive ion ($E_p > 50$ ev) flux was negative inside and positive outside the assumed boundary of the magnetosphere. Solar activity was normal during these measurements. If the

Card 1/2

UDC: 537.591

ACC NR: AP6032856

above criterion is valid for defining the magnetosphere boundary, then the Luna-10 data indicate that the magnetosphere tail extends at least 380,000 km from the Earth. Orig. art. has: 4 figures.

SUB CODE: 03/ SUBM DATE: 11May66/ ORIG REF: 001/ OTH REF: 002/ ATD PRESS: 5099

2/2 *egls*

3. 9000
3. 2100

80082
S/020/60/131/06/20/071
B014/B007

AUTHORS: Gringauz, K. I., Bezrukikh, V. V., Ozerov, V. D., Rybchinskiy, R. Ye.

TITLE: The Investigation of the Interplanetary Ionized Gas of High-energy Electrons and the Corpuscular Emission of the Sun by Means of Three-electrode Catchers for Charged Particles in the Second Soviet Cosmic Rocket

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 131, No. 6, pp. 1301 - 1304

TEXT: During the flight of the rocket the currents generated by the charged particles in the catchers were measured and recorded. For this purpose four three-electrode catchers were fitted, each of which consisted of a semispherical nickel net (radius 30 mm), under which a plane nickel collector was fitted. Between these parts a tungsten net was fitted. The potentials on the electrodes are given and the scheme of the catcher is shown in Fig. 1. The task to be performed by the tungsten net was to prevent the photoelectric effect caused by irradiation by the Sun. The electrons, which moved which sufficient energy to overcome the retarding field between the nets, generated a negative collector current. For the purpose of selecting the characteristic of the apparatus, the following was assumed with

Card 1/3

The Investigation of the Interplanetary Ionized Gas of High-energy Electrons and the Corpuscular Emission of the Sun by Means of Three-electrode Catchers for Charged Particles in the Second Soviet Cosmic Rocket

80082

S/020/60/131/06/20/071

B014/B007

respect to the interplanetary medium: There exists a steady gas medium (plasma) of mainly ionized hydrogen with a concentration of $n_1 = 5 \cdot 10^2 + 10^3 \text{ cm}^{-3}$ and an electron temperature of $10^4 \text{ }^\circ\text{K}$; there exist only sporadic corpuscular streams of protons and electrons with velocities of $(1 + 3) \cdot 10^8 \text{ cm} \cdot \text{sec}^{-1}$ and concentrations of $n_1 \approx 1 + 10 \text{ cm}^{-3}$, in some cases up to 10^3 cm^{-3} . It was possible to record positive collector currents of from 10^{-10} a to $50 \cdot 10^{-10} \text{ a}$, and negative collector currents of from 10^{-10} a to $15 \cdot 10^{-10} \text{ a}$. Recordings are shown in Figs. 2, 3, and 4. The following conclusions are drawn herefrom: 1) At a distance from the Earth of up to four equatorial semidiameters there exists a plasma with a temperature of not more than several tens of thousands of degrees. Thus, the results obtained by means of the first and third cosmic rocket were confirmed. 2) Within a range of from 55,000 to 75,000 km from the Earth, an electron flux of the density of $10^8 \text{ cm}^{-2} \cdot \text{sec}^{-1}$ was found to exist, with energies exceeding 200 ev. 3) From the positive collector currents recorded in all four catchers the authors conclude

Card 2/3

X

The Investigation of the Interplanetary Ionized Gas of ⁸⁰⁰⁸² S/020/60/131/06/20/071
High-energy Electrons and the Corpuscular Emission of B014/B007
the Sun by Means of Three-electrode Catchers for Charged Particles in the Second
Soviet Cosmic Rocket

that there exists a flux of positive ions with more than 15 ev and a density of $2 \cdot 10^8 \text{ cm}^{-2} \cdot \text{sec}^{-1}$. In conclusion, the authors draw attention to the proton fluxes with energies higher than 25 ev, which were found to exist by the automatic interplanetary station in October 1959. There are 4 figures and 4 references, 2 of which are Soviet.

ASSOCIATION: Radiotekhnicheskiy institut Akademii nauk SSSR (Radiotechnical
Institute of the Academy of Sciences, USSR)

PRESENTED: February 11, 1960, by A. L. Mints, Academician

SUBMITTED: February 5, 1960

Card 3/3

9,9100

3,2100

25987

S/560/61/000/006/005/010

E032/E114

AUTHORS: Gringauz, K.I., Bezrukikh, V.V., and Ozerov, V.D.
TITLE: Results of measurements of the positive ion concentration in the ionosphere using ion traps set up on the third Soviet earth satellite

PERIODICAL: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. No. 6. Moscow, 1961. pp. 63-100

TEXT: The third Soviet satellite (launched on May 15, 1958) carried apparatus designed to measure the positive ion concentration with the aid of ion traps. A preliminary description of the experiment (prior to the launching) was reported by K.I. Gringauz and M.Kh. Zelikman (Ref.1: UFN, 63, 16, 239, 1957). The preliminary description of the experiment is said to have been echoed in the U.S.A. where similar experiments were later described (Ref.5: W.C. Hoffman, Planetary and Space Science, V.1, 238, 1959; Ref.6: J.W. Townsend, J. Geophys. Res., V.64, 1779, 1959). A general view of one of these ion traps is shown in Fig.2. Two identical traps (Π_1 and Π_2) of this type were attached at the ends of two rods a_1 and a_2 (65 cm long each) which in turn were

Card 1/14

25987

Results of measurements of the

S/560/61/000/006/005/010
E032/E114

J

fixed to the surface of the satellite as shown in Fig.1. The traps had a central spherical collector kept at ~ -150 v relative to the body of the satellite. The radius of the outer shell was 5 cm and the diameter of the collector 3 cm. The transparency of the outer grid was approximately 0.63. Both the outer grids and the collectors were made from chromium coated brass. The electrical field between the outer grid and the central collector was capable of retaining all atmospheric positive ions (with energies of a few fractions of eV). All negative ions whose energy was less than 150 eV were repelled. These ion traps are said to be modifications of the device described by R.L. Boyd (Ref.15: Proc. Roy. Soc., V.201, 1066, 329, 1950). Bipolar voltage pulses relative to the body of the satellite were applied to the grid envelopes of the trap every 2 sec. The positive pulse had an amplitude of 27 v and a duration of 0.13 sec and the negative pulse had an amplitude of 14 v and a duration of 0.07 sec. These gave rise to a change in the potential ϕ of the grid envelope relative to the undisturbed external plasma and this in its turn resulted in a change in the thickness of the space-charge surrounding the trap. When ϕ passed through zero there was a change in the sign of this space-charge.

Card 2/14

Results of measurements of the ... 25987
S/560/61/000/006/005/010
E032/E114

charge. A block diagram of the apparatus is shown in Fig.3. The instantaneous values of the voltage amplitudes applied to the trap envelopes, and of the collector currents in the two traps, were telemetered to the earth. In this way it was possible to plot for each trap the complete ion volt-ampere characteristic, corresponding to each bipolar pulse. With $\varphi \sim 0$ and an ion concentration of 10^7 cm^{-3} , the collector current due to positive ions was of the order of $3 \times 10^{-5} \text{ A}$, while with a concentration of 10^4 cm^{-3} this current was of the order of $5 \times 10^{-8} \text{ A}$. The amplification of such currents presented no particular difficulty. The currents were in fact amplified with the aid of cathode followers with high input resistors and 6N166 (6N16B) tubes whose grid current is of the order of a few 10^{-9} A . In order to cover the entire range ($5 \times 10^{-8} - 2.5 \times 10^{-5} \text{ A}$) with a single amplifying stage it was necessary to introduce a nonlinear element, i.e. a diode, which was put in parallel with the input resistor of the amplifier and was cut off by a special bias voltage. When the input current exceeded 10^{-6} A the voltage drop across the input resistor compensated the bias voltage and the diode began to conduct and

Card 3/14

25987

Results of measurements of the

S/560/61/000/006/005/010
E032/E114

shunted the input resistor, thus reducing the amplification coefficient. Special facilities were provided for spot checks of all the supplies, fields and currents. The sawtooth positive and negative voltage pulses were produced by special oscillators set up on the satellite. In order to economise on energy consumption all the filaments were supplied from 3 v sources. The present authors state that Whipple (Ref.7: E.C. Whipple, Proc. IRE, V.47, 2023, 1959) has derived an expression for the volt-ampere characteristic of the ion traps on the third Soviet satellite and applied it to the data reported by the present authors in Ref.3 (V.I. Krassovskiy, Proc. IRE, V.47, 289, 1959). Whipple based his calculation on the assumption that the components of the ion velocities in the direction of motion of the satellite are distributed in accordance with the Maxwellian law. Whipple concluded that the determination of n_i (the ion density) reported by K.I. Gringauz and M.Kh. Zelikman (Ref.1) and V.I. Krassovskiy (Ref.2: same journal, No.2, izd-vo AN SSSR, 1959, p.36: and Ref.3) is incorrect. It is pointed out by the present authors that Whipple's theory cannot be applied to spherical ion traps since he did not take into account the spherical form of the trap and the associated quasi-radiality

Card 4/14

25987

Results of measurements of the

S/560/61/000/006/005/010
E032/E114

of its electric field which distorts the ion trajectories, nor did he take into account the thermal velocity components which lie in the plane perpendicular to the velocity of the satellite. It is stated that Whipple's results strictly apply only to a part of an infinite plane probe. The present authors show that, assuming the ion velocity distribution to be of the form

$$dn_i = n_i \left(\frac{m_i}{2\pi kT} \right)^{3/2} \cdot \exp \left\{ - \frac{m_i}{2kT} \left[(v_{i,x} - v_{c\pi,x})^2 + (v_{i,y} - v_{c\pi,y})^2 + (v_{i,z} - v_{c\pi,z})^2 \right] \right\} dv_{i,x} dv_{i,y} dv_{i,z} \quad (10)$$

where subscript i refers to the ions and subscript $c\pi$ refers to the satellite, the correct expression for the collector current is of the form:

$$dI_{k,i} = a S e n_i \left(\frac{m_i}{2\pi kT} \right)^{3/2} \exp \left\{ - \frac{m_i}{2kT} \left[(v_{i,x} - v_{c\pi,x})^2 + (v_{i,y} - v_{c\pi,y})^2 + (v_{i,z} - v_{c\pi,z})^2 \right] \right\} v_i \left(1 - \frac{2e\phi}{m_i v_i^2} \right) dv_{i,x} dv_{i,y} dv_{i,z} \quad (11)$$

Card 5/14

Results of measurements of the

25987

S/560/61/000/006/005/010

E032/E114

Fig.8 shows the theoretical volt-ampere characteristics for spherical probes (curves 1 and 2) and a part of an infinitely large plane probe (curves 3 and 4). In computing these curves it was assumed that $T = 0^\circ$ (curves 1 and 3), $T = 2000^\circ$ (curves 2 and 4); $m_i = 16$ amu, $v_{cn} = 8 \times 10^5$ cm/sec. In fact, curves 1 and 2 represent the present theory and curves 3 and 4 represent Whipple's theory. During the flight of the third satellite more than 10 000 ion volt-ampere characteristics corresponding to different altitudes were obtained. It is stated that rotational effects were clearly distinguishable and could easily be eliminated. Analysis of the ion volt-ampere characteristics (25 such characteristics corresponding to different altitudes are reproduced in this paper) has led to altitude distributions of positive ion concentration between 600 and 1000 km. Figs. 38-43 show some of these distributions. The dashed parts of the curves indicate the absence of reliable data. There are 43 figures, 2 tables and 18 references: 10 Soviet and 8 non-Soviet. The four most recent English language references read as follows:

Ref.4: W.W. Berning. Proc. IRE, V.47, 280, 1959.

Refs. 5, 6, and 7 as quoted above.

Card 6/14

SUBMITTED: March 22, 1960

BEZRUKIKH, V.V.

GRINGAUZ, K. I., BEZRUKIKH, V. V., BALANDINA, S. M., OMEROV, V. D., RAICHINSKY, R. Ye.

"Direct Observations of Solar Plasma Streams at a Distance of $\sim 1,000,000$ km from the Earth on February 17, 1961, and Simultaneous Observations of the Geomagnetic Field"

Soviet Papers Presented at Plenary Meetings of Committee on Space research (COSPAR) and Third International Space Symposium, Washington, D. C., 23 Apr - 9 May 62

9.9100 (also 2605)

11.1530

25988

S/560/61/000/006/006/010

E032/E114

AUTHORS: Gringauz, K.I., Bezrukikh, V.V., Ozerov, V.D., and Rybchinskiy, R.Ye.

TITLE: A study of the interplanetary ionized gas, energetic electrons and solar corpuscular emission using three-electrode charged-particle traps on the second Soviet cosmic rocket

PERIODICAL: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. No. 6. Moscow, 1961. pp. 101-107

TEXT: This paper was first published in Doklady AN SSSR, Vol.131, p.1301 (1960).

The first, second and third Soviet space rockets carried three-electrode charged-particle traps. The most valuable data were obtained with the second space rocket (12000 collector current measurements). The present paper is therefore largely concerned with the data obtained during the latter flight. The space rocket which was fired in the direction of the moon on September 12 1959 carried equipment designed to measure interplanetary ionized gas, electrons with energies in excess of 200 eV, and also the corpuscular solar radiation. Four three-electrode traps were set

Card 1/7

X

25988

S/560/61/000/006/006/010

A study of the interplanetary ionized... E032/E114

up on the surface of the space probe and were located at the corners of a tetrahedron inscribed into a sphere. Each trap consisted of a hemispherical outer nickel grid (radius 30 mm) with a plane nickel collector inside the grid. A plane tungsten grid was placed between the collector and the outer grid. The arrangement is illustrated in Fig.1. The potentials of the electrodes relative to the body of the container were: collectors - (60-90) volts, inner grids (g1) - 200 volts, outer grids (g2) - 10, -5, 0 and + 15 volts respectively. The main function of the inner grid was to suppress the photoelectrons from the collectors which are ejected by ultraviolet solar radiation, and to suppress the secondary electron emission due to the bombardment of the collectors by electrons and protons. The various potentials were applied to the outer grids in order to be able to estimate the energy of positive particles and to differentiate between current produced by protons of the interplanetary stationary plasma (~ 1 eV) and current due to protons in corpuscular streams whose energies are higher by three orders of magnitude. Electrons belonging to the stationary plasma, and solar corpuscular streams with energies up to 25 eV do not give rise to a collector

Card 2/7

25988

A study of the interplanetary ionized... S/560/61/000/006/006/010
E032/E114

current since they cannot overcome the retarding field due to the potential difference between the inner and the outer grids. On the other hand, electrons moving in the earth's magnetic trap (the so-called outer radiation belt) do have sufficient energy to overcome the field between the two grids and can give rise to a negative collector current. The collector current amplifiers were sufficient to transmit information about the magnitude of the positive collector currents in the range 10^{-10} - 50×10^{-10} amp and negative collector currents in the range 10^{-10} - 15×10^{-10} amp. During its translational motion the container also performed complicated and rapid rotational motion. The angular position of each trap was therefore subject to continuous variation giving rise to oscillations in the collector current. This is illustrated in Fig.2, which gives a plot of the collector currents as a function of distance R (km) for the trap with $\phi_{g2} = -10$ volt. The maximum and also the minimum values correspond to roughly the same orientations. Thus, changes in the collector current which are mainly due to the surrounding medium can be described by curves passing through points corresponding to the successive maxima and minima in the collector current. In this way, the rotation of the

Card 3/7

25988

A study of the interplanetary ionized... S/560/61/000/006/006/010
EO32/E114

container can, at least to some extent, be excluded. Consideration of the experimental data has led to the following conclusions. A plasma having a temperature not greater than some tens of thousands of degrees was present at distances of up to 4 earth radii from the earth's surface. The estimates of the concentration of the plasma are given by K.I. Gringauz, V.G. Kurt, V.I. Moroz and I.S. Shklovskiy in Ref.5 (page 108 of the present issue). In the region between 55000 and 75000 km an electron flux of about $10^8 \text{ cm}^{-2}\text{sec}^{-1}$, which consisted of electrons having energies in excess of about 200 eV, was recorded. The existence of such an electron flux in this region is confirmed by results obtained with the first space rocket in January 1959. Beginning at 9 hr 30 min Moscow time, on September 13 1959 and right up to the impact on the lunar surface, the probe passed through a positive ion stream (probably protons). The energies of these particles were in excess of 15 eV and the flux was about $2 \times 10^8 \text{ cm}^{-2}\text{sec}^{-1}$. The existence at various times of a stream of protons with energies in excess of 25 eV was discovered with the aid of similar apparatus at various distances from the earth during the flight of the Automatic Planetary Station during October 1959. These protons apparently

Card 4/ 7

A study of the interplanetary ionized...²⁵⁹⁸⁸
S/560/61/000/006/010
E032/E114

belong to solar corpuscular emission. These results therefore, constituted the first direct observation of corpuscular radiation outside the earth's magnetic field.

There are 4 figures and 5 references: 3 Soviet and 2 non-Soviet.

The English language reference reads as follows:

Ref.3: L. Bierman. The Observatory, V.77, 187, 1957.

Card 5/7.

BEZRUKIKH, V.V.

4

GRINGAUZ, K.I., BEZRUKIKH, V.V., MUSATOV, L.S., RYBCHINSKIY, R.YE.,
SHERONOVA, S.N.

Measurement made in the Earth's Magnetosphere by means of Charged Particle
traps aboard the Mars 1 Probe.

Report to be submitted for the 4th International Space Science Symposium
(COSPAR) Warsaw, 2-12 June 63

L 23291-65 EWT(1)/FSF(h)/FSS-2/FS(v)-3/EWG(s)-2/FCC/EWA(d)/EEC(t) Po-4/Fe-5/Pq-4/
ACCESSION NR: AP5001986 Pae-2/Pi-4 TI/ S/0020/64/159/006/1272/1275
GW

AUTHOR: Gringauz, K. I.; Dolginov, Sh. Sh.; Bezrukikh, V. V.; Yero-
shenko, Ye. G.; Zhuzgov, L. N.; Musatov, L. S.; Solomatina, E. K.;
Fastovskiy, U. V.

TITLE: Observations using the artificial satellite Electron-2 of the
correlation between variations of the magnetic field and streams of
positive ions inside the terrestrial magnetosphere

SOURCE: AN SSSR. Doklady, v. 159, no. 6, 1964, 1272-1275

TOPIC TAGS: artificial satellite, magnetometer, positive ion, geomag-
netic field, magnetosphere, radiation belt, flux intensity, negative
ion, theoretical field, apogee distance

ABSTRACT: The artificial satellite Electron-2, equipped with magne-
tometers and a trap for charged particles, recorded positive ions of
all energies, their fluxes with energies of more than 100 ev, and
measured all three components of the geomagnetic field in the magneto-
sphere and at radiation belts. Recorded data showed a correlation
between the variations of the magnetic activity on the terrestrial

Card 1/2

L 23291-65
ACCESSION NR: AP5001986

surface and the intensities of fluxes of positive ions and the magnetic field far from the earth. This correlation was observed on quiet days and on days with magnetic disturbances. Numerous negative ion fluxes were recorded on magnetically quiet days. During this time, the magnetometer recorded a magnetic field of regular intensity although it exceeded the theoretical field by 20 γ. The maximum deflection from the theoretical field was detected at the apogee of the satellite. On 12 February 1964, all magnetic observatories on the earth recorded magnetic disturbances of sudden commencement while the trap in the satellite recorded positive ion fluxes exclusively of an intensity of $4 \cdot 10^{-10}$ amp. At this time the satellite was at apogee. The magnetometer recorded a rapid increase in the magnetic field. Orig. art. has: 4 figures. [EG]

ASSOCIATION: none

SUBMITTED: 15Sep64

ENCL: 00

SUB CODE: LS,SV

NO REF SOV: 003

OTHER: 008

ATD PRESS: 3173

Cc: 2/2

L 2799-66 EWT(1)/FCC/EWA(h) GS/GW
ACCESSION NR: AT5023579

UR/0000/65/000/000/0177/0184

AUTHOR: Bezrukikh, V. V.; Gringauz, K. I.

24
B+1

TITLE: Outer region of the terrestrial ionosphere¹² (from 2000 to 200,000 km)

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 177-184

TOPIC TAGS: ionosphere, astronautics

ABSTRACT: The article is a survey of information presently available on the outer region of the ionosphere above 2000 km. It is pointed out that the peripheral region of the ionosphere is of interest from both a scientific and an engineering viewpoint due to the rapid development of astronautics. Orig. art. has: 6 figures, 1 table. [14]

ASSOCIATION: none
SUBMITTED: 02Sep65
NO REF SOV: 007.

ENCL: 00
OTHER: 012

SUB CODE: ES
ATD PRESS: 4102

BVK
Card 1/1

L 2885-66 FSS-2/EWT(1)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/GS/GW

ACCESSION NR: AT5023603

UR/0000/65/000/000/0336/0341

AUTHOR: Gringauz, K. I.; Dolginov, Sh. Sh.; Bezrukikh, V. V.; Yeroshenko, Ye. G. 96
Zhuzgov, L. N.; Musatov, L. S.; Solomatina, E. K.; Fastovskiy, U. V. 61

TITLE: Comparison of simultaneous measurements of magnetic field and positive ion flux within the Earth's magnetosphere recorded by the Elektron-2 satellite

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 336-341

TOPIC TAGS: space environment, ionospheric physics, electron density, ion density, earth magnetic field/Elektron 2 satellite

ABSTRACT: Measurements of charged-particle flux and magnetic field at a height of 6—11.6 R (R, Earth's radius) were made by Elektron-2. The particle trap used was capable of recording positive ion flux with ion energy in excess of the potential difference of the satellite with respect to its environment and electron flux with electron energy in excess of 100 ev. The magnetometer, with orthogonally arranged sensors, was capable of measuring the magnetic field in the range of $\pm 120 \times 10^{-5}$ erg

Card 1/2

L 2885-66

ACCESSION NR: AT5023603

in each component direction. Its threshold was 2×10^{-5} erg. The satellite measurements, when compared with solar activity data in the form of K_p indexes recorded via ground observatories, show inconsistencies in the correlation between the variation of magnetic activity on the Earth's surface and the variation of the geomagnetic field intensity and charged particle flux as measured by the satellite. It is uncertain whether these observations can be explained by the solar wind penetrating the magnetosphere or by near-earth plasma due to charged particles accelerated by a yet unknown mechanism. Orig. art. has: 6 figures. [BD]

ASSOCIATION: none

SUBMITTED: 02Sep65

ENCL: 00

SUB CODE: ES,SV

NO REF SOV: 003

OTHER: 008

ATD PRESS: 4109

Card 2/2

1. 0303-66 FSS-2/ENT(1)/FS(v)-3/FGG/EWA(d)/EWA(h) TT/TS/TT

ACCESSION NR: AT5023612

UR/0000/65/000/000/0418/0419

AUTHOR: Bezrukikh, V. V.; Gringauz, K. I.; Musatov, L. S.; Solomatina, E. K.

TITLE: Possibility of a soft electron component in the outer radiation belt, and the variations in this component

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 418-419

TOPIC TAGS: satellite data analysis, radiation belt, electron radiation

ABSTRACT: Data are given from measurements of charged particle fluxes made by the "Elektron-2" satellite using charged particle traps. The data were obtained during passage of the satellite through the outer radiation belt in the initial stage of flight. Negative collector currents recorded in the trap varied considerably from orbit to orbit; on some orbits there were practically no negative currents. At the same time, radiation counters installed in the satellite showed a fluctuation of only 10% in the count rate for high-energy particles ($E > 100$ kev). Graphs are given that illustrate this phenomenon. The highest intensity of soft electrons in the outer radiation belt between 30 January and 17 February 1964 was $\sim 3 \cdot 10^8 \text{ cm}^{-2} \cdot \text{sec}^{-1}$.

Card 1/2

L 2993-66

ACCESSION NR: AT5023612

6
recorded on 31 January 1964. Experimental data for this period indicate that this flux is at least ten times the intensity of high-energy electrons trapped in the outer radiation belt and recorded constantly by the radiation counter. These results may be interpreted as evidence of a soft component in the electron fluxes of the outer radiation belt that varies with time to a much greater extent than does the high-energy particle flux. The soft electron region always extended beyond the outer boundary of the radiation belt. "The authors are grateful to S. N. Vernov, Yu. N. Logachev, E. N. Sosnovets, Ye. A. Benediktov, G. G. Getmantsev, and N. A. Mityakov who kindly allowed us to study the results of their experiments before publication." Orig. art. has: 3 figures. [14]

ASSOCIATION: none

SUBMITTED: 02Sep65

ENCL: 00

SUB CODE: ES, NP

NO REF SOV: 004

OTHER: 000

ATD PRESS: 410

Card 2/2 *mb*

L 01805-66 EWT(d)/FSS-2/EWT(1)/EEG(k)-2/FCC/EEG-4/EWA(h) TT/AST/GH

ACCESSION NR: AP5020829

UR/0020/65/163/004/0873/0876

AUTHOR: Bezrukikh, V. V.; Gringauz, K. I.; Musatov, L. S.; Rybchinskiy, R. Ye.; Khokhlov, M. Z. 55 55 55

TITLE: Study of solar plasma flow by the Zond-2 interplanetary station 91 89 B

SOURCE: AN SSSR. Doklady, v. 163, no. 4, 1965, 873-876

TOPIC TAGS: solar radiation, plasma measurement, plasma flow, ion trap, particle detector/Zond 2 12,55 12,55 9M

ABSTRACT: An investigation of solar plasma flow was made to confirm the hypothesis that a correlation exists between the rate of solar plasma flow and the Kp index characterizing geomagnetic disturbances. Solar plasma flow was measured by Zond-2, equipped with modulation and integral particle traps. The latter were modified to measure electron and positive ion flux with energies in excess of 70 ev and 50 ev, respectively. The modulation trap, similar to the one used on Explorer-10, had a modulating grid supplied by two voltages: a d-c voltage assuming consecutively 8 values between 230 and 3200 v,

Card 1/3

L 01805-66

ACCESSION NR: AP5020829

and a rectangular a-c voltage of 450 v with a modulating frequency of 1000 cps. Electron emission from the collector was suppressed by a grid with a 70-v potential with respect to the body of the satellite. An alternating component of the collector current, proportional to the magnitude of the positive-ion flow, was recorded by a resonance amplifier adjusted to the modulation frequency. The instrument was capable of sensing positive ion flow within the range of 10^7 to 2.5×10^9 $\text{cm}^{-2}\text{sec}^{-1}$. Recording of positive-ion flow of $E > 70$ ev was aided by a d-c amplifier in the trap circuit. During the flight of Zond-2, the modulation trap was directed toward the Sun. When a deviation occurred, a correction was automatically made in the readings based on a study of the angular characteristics of the trap in the laboratory. On 7 Dec 1964, solar plasma flow was recorded at 1.5×10^9 $\text{cm}^{-2}\text{sec}^{-1}$, coinciding with the geomagnetic storm which occurred on the same date. This value was reached only during strong magnetic storms and tended to confirm the correlation between the K_p index and solar plasma flow. The use of particle traps capable

Card 2/3

L 01805-66

ACCESSION NR: AP5020829

of direct determination of positive-ion flow gave better results than
the electrostatic analyzer on Mariner-2. Orig. art. has: 2
figures. [TS]

ASSOCIATION: Radiotekhnicheskiy institut Akademii nauk SSSR (Radio
Engineering Institute, Academy of Sciences, SSSR) 55

SUBMITTED: 29Apr65

ENCL: 00

SUB CODE: AA,SV

NO REF SOV: 002

OTHER: 006

ATD PRESS: 4085

Card

3/3

L 22189-66 EPF(n)-2/EWA(h)/EWT(1)/ETC(f)/EWG(m)/FCC IJP(c) AT/GW
ACC NR: AP6002857 SOURCE CODE: UR/0286/65/000/024/0006/0006

AUTHOR: Gringauz, K. I.; Bezrukikh, V. V.; Ozerov, V. D.; Rybchinskiy, R. Ye.

ORG: none

TITLE: Plasma layer near the Earth

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 6

TOPIC TAGS: charged particle, plasma sheath, plasma density, plasma charged particle, upper atmospheric radiation

ABSTRACT: This Author Certificate announces the establishment of the existence (at heights of approximately from 2000-20,000 kilometers above the surface of the earth) of a previously unknown region of the earth's plasma sheath. This sheath has an increased concentration of charged particles (in respect to the interplanetary gas) which decreases with height. The magnitude of the negative gradients of the charged particle concentrations in the upper part of this region consists of some hundreds of particles in $1 \text{ cm}^3/1000 \text{ km}$ of height. The concentration near the upper boundary of the region does not exceed 10^2 particles/ cm^3 . Announcement of

Card 1/2

L 22189-66

ACC NR: AP6002857

the change in the formulation of discovery. On the basis of the decision of the Committee for the Affairs of Inventions and Discoveries at the Council of Ministers, SSSR, the new text is published. No. 27 (Application No. OT-2821 of 16 February 1963)7

SUB CODE: 04/ SUBM DATE: 16Feb63

Card 2/2 nst

ACC NR: AP7007598

SOURCE CODE: UR/0293/66/004/006/0851/0870

AUTHOR: Gringauz, K. I.; Bezrukikh, V. V.; Khokhlov, G. N.
ORG: none

TITLE: Results of experiments for the study of plasma in circum-lunar space using charged particle traps on the first artificial lunar satellite

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 6, 1966, 851-870

TOPIC TAGS: lunar satellite, artificial satellite orbit / Luna-10 lunar satellite

SUB CODE: 22,03,20

ABSTRACT:

Information is given on the plasma in the tail of the earth's magnetosphere at great distances from the earth and on the plasma in circumlunar space. The instruments used aboard "Luna-10" for obtaining these data are described (four charged particle traps were used). Much of the text is an analysis of the character of change of the collector currents of the traps at the time the moon passed through the tail of the earth's magnetosphere. Measurement data are used in estimating the upper limit of the possible concentration of thermal charged particles in the lunar ionosphere. The measurements indicate that between 5 and 8 April 1966 the satellite emerged from the tail of the earth's magnetosphere and then (with the approach of the May full moon) between 28 April and 2 May again entered the tail of the magnetosphere and between 5 and 7 May emerged from it. If this was the case the distance from the earth in the antisolar direction in which the existence

Card 1/2

UDC: 537.591

09221541

ACC NR: AP7007598

of the tail of the magnetosphere has been experimentally demonstrated increased from about 200,000 km (according to the data of IMP-1) to about 380,000 km. Measurement of the fluxes of positive ions with $E_p > 50$ eV in most contacts made when the moon was known to be situated outside the tail of the earth's magnetosphere reveals that the magnitude of these fluxes in the lunar satellite orbit differs little from the typical magnitude of the fluxes of protons of the unperturbed solar wind $\sim 1-5 \cdot 10^8 \text{ cm}^{-2} \cdot \text{sec}^{-1}$. The instruments used did not make it possible to determine the energy spectrum of these fluxes. The simultaneous recording of positive currents of the almost diametrically opposite placed traps indicates that near the moon there is a perturbed region of solar plasma in which there are ion fluxes of comparable magnitude moving in different directions. The maximum possible concentration of charged particles in the lunar ionosphere was found to be $100-300 \text{ cm}^{-3}$.
Orig. art. has: 10 figures. [JPRS: 39,718]

Card 2/2

ACC NR: AP6034570

SOURCE CODE: UR/0020/66/170/006/1306/1309

AUTHOR: Gringauz, K. I.; Bezrukikh, V. V.; Khokhlov, M. Z.; Zastenker, G. N.;
Remizov, A. P.; Musatov, L. S.

ORG: none

TITLE: Experimental results from observations of the lunar ionosphere
performed by the first artificial lunar satellite

SOURCE: AN SSSR. Doklady, v. 170, no. 6, 1966, 1306-1309

TOPIC TAGS: lunar atmosphere, ionosphere, ion trap, electron trapping,
electron flux, lunar satellite / Luna-10 lunar satellite

ABSTRACT:

In an accompanying review article on the Luna-10*, a brief description is given of the two low-energy ion and electron traps that were carried by the satellite. K. I. Gringauz et al have subsequently published a preliminary analysis of the data from these traps, and have made some tentative deductions concerning the nature of the lunar ionosphere.

One difficulty in the trap measurements has been the generally low concentration of charged particles in the lunar ionosphere. Another is the uncertainty as to what effect the unknown surface charge status of the satellite might have on the registered particle levels. It was to counter the latter effect that traps for both thermal ions and thermal electrons were installed, each with a form of square-

Card 1/7

UDC: 537.591

ACC NR: AP6034570

wave gating. The ion trap had twin orthogonal elements and a common collector, as seen in Fig. 1(a); input flux was grid-modulated by a square biasing wave, -3 to +7 v.

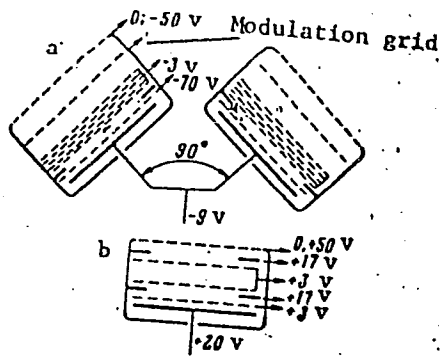


Fig. 1. Ion trap (a) and electron trap (b)

Output was detected by an amplifier tuned to this modulation frequency [unspecified]. To further overcome spurious local charge effects, the outermost grid was also modulated at 2-minute intervals by a square wave between 0 and -50 v. The electron trap outer grid was similarly modulated, but between 0 and +50 v. Interrogation of the traps was performed at 2-minute intervals. It was pointed out that rotation or tumbling of the satellite, with a period of about 40 seconds, caused "irregularity" in the measurements; this point was not elaborated on.

Card 2/7

ACC NR: AP6034570

Data from the ion trap have provided some idea of ion distribution in the vicinity of the Moon, but do not yield a breakdown between thermal and possibly higher energy ions. Calculated ion currents from some 450 readings are shown as a function of altitude in Fig. 2, for the general cases where the Moon was 1) within and 2) outside of the Earth's magnetosphere. A perceptible drop in ion current is seen when the Moon and its satellite entered the magnetosphere — on the average, from 3.1×10^{-12} amp to 2.3×10^{-12} amp. It also appears that there is no strong correlation of ion density with lunar altitude, nor with change in bias of the trap's external grid. If it is assumed that the ions encountered were thermal, i. e., that the satellite's orbital velocity greatly exceeded ion thermal velocities, then the calculations show a maximum ion density near the Moon of about $100/\text{cm}^3$. However, a varying component of ion flux was noted which could be correlated with solar wind flux; this fact, plus the nondependence of measured flux on altitude or grid biasing, suggest that at least part of the recorded ions were at energies well above thermal, in which case the ion density estimate would have to be revised downward.

The satellite's electron count, both in free space and in the magnetosphere, showed discrete high and low levels (Fig. 3). The

Card 3/7

ACC NR: AP6034570



Card 4/7

ACC NR: AP6034570

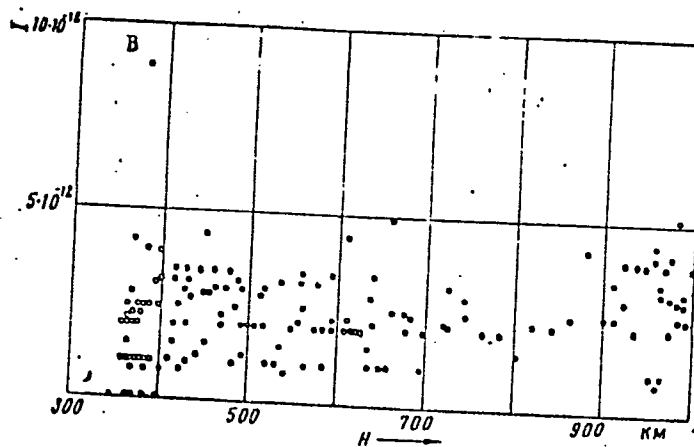


Fig. 2. Ion current

A - Moon outside magnetosphere;
B - Moon within magnetosphere.

Card 5/7

ACC NR: AP6034570

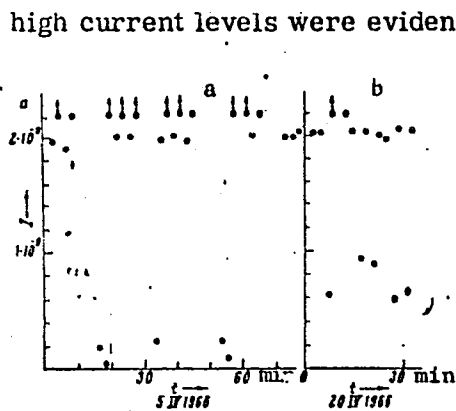


Fig. 3. Electron current

A - Within the magnetosphere;
B - outside the magnetosphere.

decreased due to interception of low-energy electrons by trap elements; laboratory tests have shown that diversion of the latter type at the 1-ev level can reduce true readings by a factor of 3 or 4. The

high current levels were evidently caused by photoelectrons from the satellite surface elements, since the levels dropped sharply when the satellite entered lunar night. As with the ion readings, the average electron flux was greater in free space (7.2×10^{-10} amp) than in the magnetosphere (4.8×10^{-10} amp). The corresponding densities, assuming energies on the order of 1 ev, were calculated at $80/\text{cm}^3$ and $60/\text{cm}^3$ respectively, and $15-20/\text{cm}^3$ on the lunar night side. Whereas the electron trap readings may have been erroneously increased by photoelectrons, they may also have been

Card 6/7

ACC NR: AP6034570

authors intend to obtain a more accurate evaluation of these side effects and of their influence on the validity of trap readings Presented by Academician A. L. Mints on 23 June 1966. Orig. art. has: 3 figures. [FSB: v.2, no.12]

SUB. CODE: 03,20,22 / SUBM DATE: 14Jul66 / ORIG REF: 003 / OTH REF: 006

Card 7/7

BEZRUKIY, L., inzh.-mekhanik, aspirant

Potato-digging machines can be improved. NTO 4 no.9:47 S '62.
(MIRA 16:1)

1. Belorusskiy institut mekhanizatsii sel'skogo khozyaystva.
(Potato digger (Machine))

BEZRUKIY, L.P., inzh.

Experiments in breaking down soil clods. Trakt. i sel'khoz mash.
31 no.11:23-26 N '61. (MIRA 14:12)

1. Belorusskiy institut mekhanizatsii sel'skogo khozyaystva.
(Soil mechanics)

BEZRUKIY, L.P., inzh.

Improvement of working parts of cultivators. Mekh. i elek. sots.
sel'khoz. 21 no.4:46-47 '63. (MIRA 16:9)

1. Belorusskiy institut mekhanizatsii sel'skogo khozyaystva.
(Cultivators)

ANTONOV, V.; BEZRUKOV, A.; VAL'TER, M., red.; PARGLIS, Ya., tekhn.red.

[Casting of diesel engine cylinder heads in shell molds;
practices of the diesel engine manufacturing plant in Riga]
Otlivka golovok tsilindrov dizelei v obolochkovye formy;
opyt Rzhskogo dizelestroitel'nogo zavoda. Riga, TSentr.
biuro tekhn.informatsii, 1960. 15 p.

(Shell molding (Founding)) (MIRA 14:12)
(Riga--Diesel engines)

YUKHNOVICH, A.N., veter. vrach (Yel'ninskiy rayon, Smolenskoj oblasti);
 RUDOMETKIN, Ya.S., veter. vrach; EVENTOV, M.Z., veter. vrach;
 SOBOLEV, A.S., dotsent (Estonskaya SSR); DOL'NIKOV, Yu.Ya., kand.
 veter. nauk; PALIMPSESTOV, M.A., prof.; SIMONENKO, N.M., dotsent;
 GONCHAROV, A.P., assistant; BEZRUKOV, A.A.; FROLENKOV, N.A., veter.
 vrach (Serov, Sverdlovskoy oblasti); KOSHCHHEYEV, P.M.; VOROB'YEV,
 M.M., kand. veter. nauk; YANCHENKO, P.Kh., veter. vrach;
 AMELIN, I.P.; BYCHKOV, A.I., kand. veter. nauk; SHVYREV, G.I.,
 veter. vrach (Stavropol'skiy kray); DANILIN, N.F.; TRUSHIN, A.Z.,
 veter. vrach; SKRYPNIKOVA, T.K., veter. fel'dsher; MIKHEYEV, A.D.;
 KARMANOVA, Ye.M., kand. biol. nauk; REMIZOV, Ye.S., mladshiy
 nauchnyy sotrudnik; ANTIPIN, D.N., referent

From helminthological practice. Veterinariia 38 no.7:55-58
 J1 '61. (MIRA 16:8)

1. Reshetovskiy veterinarnyy uchastok, Novosibirskoy oblasti
 (for Rudometkin). 2. Sovkhoz "Buda-Koshelevskiy" Gomel'skoy
 oblasti (for Eventov). 3. Sibirskiy nauchno-issledovatel'skiy
 veterinarnyy institut (for Dol'nikov). 4. Khar'kovskiy veteri-
 narnyy institut (for Palimpsestov, Simonenko, Goncharov).
5. Blagoveshchenskiy sel'skokhozyaystvennyy institut (for
 Bezrukov). 6. Novo-Nikolayevskiy veterinarnyy uchastok Krasno-
 darskogo kraya (for Lochkarev). 7. Karpilovskiy veterinarnyy
 uchastok Chernigovskoy oblasti (for Ponomarenko). 8. Kamalinskiy
 veterinarnyy uchastok Krasnoyarskogo kraya (for Koshcheyev).

(Continued on next card)

GONCHAROV, G.P.; KRASAVIN, V.P.; BEZRUKOV, A.A.

Improving a unit for thermal cracking. Nefteper. i neftekhim.
no.10:9-11 '64. (MIRA 17:12)

1. Omskiy neftepererabatyvayushchiy zavod.

Bezrukov, A.F.

91. TRAGI K-06 TYPE HGI SERIES FAN FOR THE MAIN VENTILATION OF MINES.
Bushol, A.R., Zhuravkov, I.N. and Bezrukov, A.F. (Ugol (Coal), Moscow, Sept.
1956, 29-33). An illustrated description, performance figures and
characteristic curves are given for a two-stage axial fan 1.8 m in diameter.
A range of one and two stage fans 1.0 to 3.6 m in diameter is proposed. (L).

nt 3
made
Gay

USPENSKIY, F.Ya.; KVITNITSKAYA, R.N.; VOLKOV, K.D.; BEZRUKOV, A.F.; ORLOV,
Ya.L., kand.ekonom.nauk, spets.red.; BAULIN, V.A., red.; MEDRISH,
D.M., tekhn.red.

[Economy and planning of public food service] Ekonomika i planirovanie
obshchestvennogo pitaniia. Moskva, Gos.izd-vo torg.lit-ry, 1960.
248 p.

(Food industry)

(MIRA 13:5)

BEZRUKOV, A.I.; BARSUKOV, M.M., inzh. po opytnym rabotam

Maintenance of tracks laid on reinforced concrete blocks.
Put' i put.khoz. 9 no.4:9-12 '65.

(MIRA 18:5)

1. Nachal'nik Kazatinskoy distantzii puti Yugo-Zapadnoy dorogi
(for Bezrukov). 2. Kazatinskaya distantsiya puti Yugo-Zapadnoy
dorogi (for Barsukov).

BEZRUKOV, A.I.

Automatic temperature control in gas evacuation boreholes for
underground gas producers. Podzem.gaz.ugl. no.1:65-67 '58.

(MIRA 11:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektnyy institut
podzemnoy gazifikatsii ugley.

(Coal gasification, Underground) (Temperature regulators)

BEZRUKOV, A.I.

BELYANOVA, Ye.M.; BEZRUKOV, A.I.

Determining the calorific capacity of underground coal gasification gas by the method of measuring the heat conductivity of the gas mixture. Podzem.gaz.ugl. no.1:67-70 '58. (MIRA 11:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektnyy institut podzemnoy gazifikatsii ugley.
(Calorimetry) (Heat--Conduction)

BEZRUKOV, A.M.; PRIBUD'KO, N.S.

The new technology opens great possibilities. Put i put.khoz. 6 no.6:
15 '62. (MIRA 15:7)

1. Nachal'nik Kazatinskoy distantzii puti Yugo-Zapadnoy dorogi
(for Bezrukov). 2. Zamestitel' nachal'nika Kazatinskoy distantzii
puti Yugo-Zapadnoy dorogi (for Pribud'ko).
(Kazatin--Railroads--Maintenance and repair)

BEZRUKOV, A.M.; PRIBUD'KO, N.S.; BARSUKOV, M.M., inzh.

Our methods of maintenance of tracks of the new construction type. Put' 1 put.khoz. 6 no.11:21-22 '62. (MIRA 16:1)

1. Nachal'nik Kazatinskoy distantssi Yugo-Zapadnoy dorogi (for Bezrukov).
 2. Zamestitel' nachal'nika Kazatinskoy distantssi Yugo-Zapadnoy dorogi (for Barsukov).
- (Railroads—Maintenance and repair)

BEZRUKOV, A. M.; PRIBUD'KO, N. S.; BUGAYCHUK, I. S.

Laying switches on blocks of reinforced concrete. Put' i put.
khoz. 7 no.3:3-6 '63. (MIRA 16:4)

1. Nachal'nik Kazatinskoy distantzii puti Yugo-Zapadnoy dorogi
(for Bezrukov). 2. Zamestitel' nachal'nika Kazatinskoy distantzii
puti Yugo-Zapadnoy dorogi (for Pribud'ko). 3. Nachal'nik mekhanizirovannogo uchastka Kazatinskoy distantzii puti Yugo-Zapadnoy dorogi (for Bugaychuk).

(Railroads—Switches)

BEZRUKOV, A.M.; BELOV, N.A.; BARSUKOV, M.M., inzh.

Method for restoring the strength of dowels. Put' i put. khoz.
7 no.11:18 '69. (MIRA 16:12)

1. Nachal'nik Kazatinskoy distantzii puti Yugo-Zapadnoy dorogi
(for Bezrukov). 2. Starshiy inzh. Vsesoyuznogo nauchno-issle-
dovatel'skogo instituta zheleznodorozhnogo transporta Ministerstva
putey soobshcheniya (for Belov). 3. Kazatinskaya distantsiya
puti Yugo-Zapadnoy dorogi (for Barsukov).

PINUS, Ya.S.; GRITSKOV, V.S.; BEZRUKOV, A.P.

Automatic measurement of mixer sheath temperatures. Metallurg
7 no.6:26 Je '62. (MIRA 15:7)

1. Kuznetskiy metallurgicheskiy kombinat.
(Open-hearth furnaces--Equipment and supplies)
(Thermocouples)

BLIZHUKOV, A.F.; GRITSKOV, V.S.

Mechanical valve reversing time relay integral with the furnace.

Metallurg 9 no.6:17-18 Je '64. (MIRA 17:9)

1. Kuznetskiy metallurgicheskiy kombinat.

BEZRUKOV, A. Ya.

(Associate, Chief Astronomical Observatory)

"Character of Atmospheric Circulation, Fluctuation of the Levels of Lakes, and the Caspian Sea," report given at a conference on the levels of the Caspian Sea held by the Inst. of Oceanology, AS USSR. Iz. Ak. Nauk SSSR, Ser. Geog., pp 89-91, Sep/Oct 1952

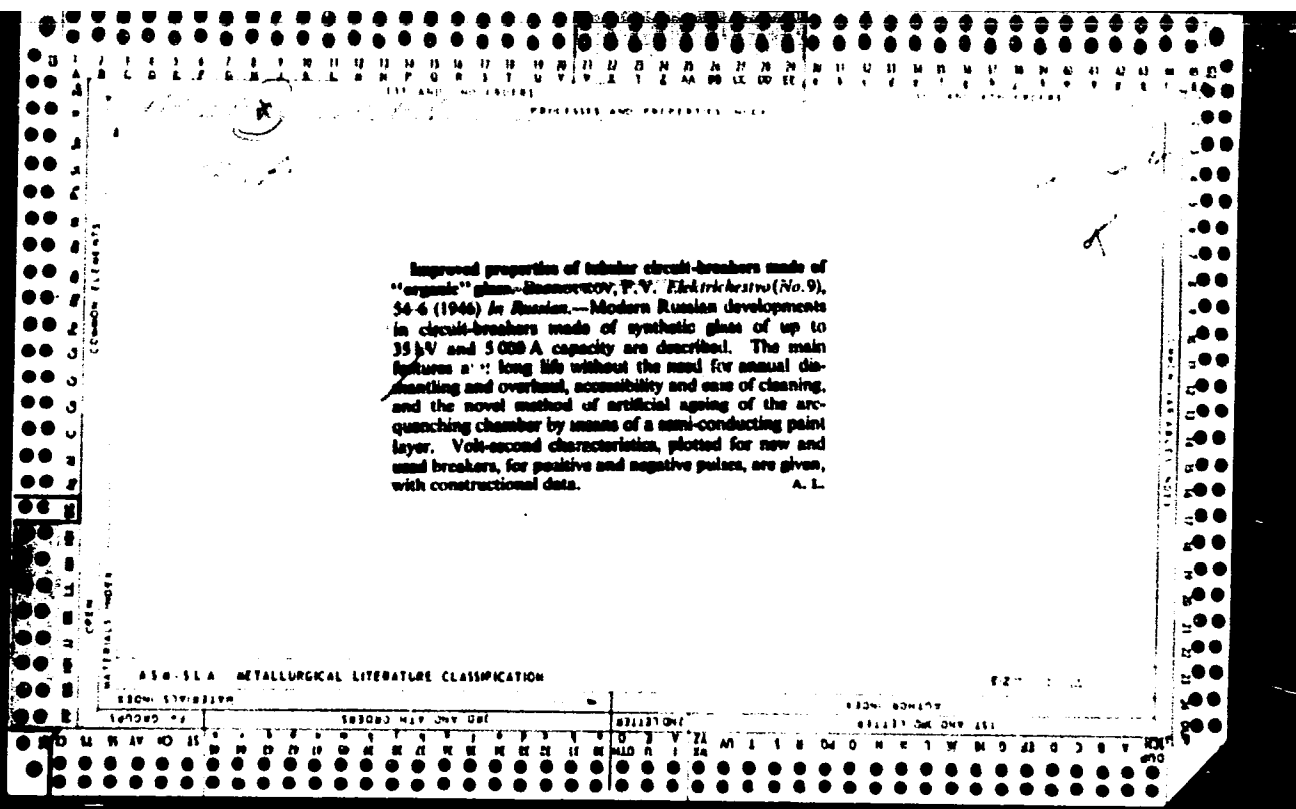
BEZRUKOV, B.A., inzh.; PODOL'TSEV, L.N., inzh.; SUVOROV, B.V., inzh.

Sinking reinforced concrete shells with a diameter of 4 m. into fine-grained sand. Transp.stroi. 11 no.4:19-21 Ap '61. (MIRA 14:5)
(Archangel--Eridges--Foundations and piers)

CHEZHIN, V.A. [deceased]; BEZRUKOV, B.A.

Practices in assembling steel spans with a 17 m. cantilever. Transp.
stroi. 15 no.7:13-15 J1 '65. (MIRA 18:7)

1. Glavnyy inzh. Mostostroya No.6 (for Chezhin).



BEZRUKOV, F.V.

GALEIN, Yu.P., kandidat tekhnicheskikh nauk; BEZRUKOV, F.V., inzhener.

Tubular discharge arresters. Vest. elektroprom. 28 no.3:25-35 Mr '57.
(MLRA 10:4)

1. Vsesoyuznyy elektrotekhnicheskiy institut im. Lenina.
(Lightning protection)

SOV/110-59-1-7/28

AUTHORS: Savel'yev V.P. and Koval'skaya A.V. (Candidates of Technical Sciences); and Bezrukov F.V. (Engineer).

TITLE: Lightning Arresters of High Rupturing-Capacity (Trubchatype razryadniki s povyshennoy otklyuchayushchey sposobnost'yu)

PERIODICAL: Vestnik Elektromyshlennosti, 1959, Nr 1, pp 23-27 (USSR)

ABSTRACT: Two types of lightning arrester are now made by Soviet industry; type RTF is of bakelised fibre and type RTV of vinyl-plastic. They are made for voltages of 3 - 110 kV; for the higher voltages the current interrupted must not exceed 10 kA. It is very difficult to develop 35- and 110-kV lightning arresters for larger currents. Tests on arresters type RTV in which vinyl-plastic is used as gas-generating and insulating material show that the mechanical strength of the arresters is fully exploited. The results given in Fig 1 show that the dynamic strength of these tubes increases with wall thickness only up to about 8 to 10 mm. The upper limit of current cannot be increased much by increasing the tube diameter because this also increases greatly the lower limit of current at which the arrester will operate. Vinyl-plastic tubes now being delivered are very variable in strength. Investigations have shown that the best way of increasing

Card 1/4

SOV/110-59-1-7/28

Lightning Arresters of High Rupturing-Capacity

the rupturing-capacity of the arresters is to reinforce the thin vinyl-plastic tube with insulating covers of high mechanical and electrical properties. Glass cloths impregnated respectively with epoxy resin grade E-37 and with epoxy-phenol resin have been tried for this purpose. Table 1 gives the mechanical and electrical properties of each combination. Epoxy resin was found better than epoxy-phenol resin for use with glass cloth. Different methods of applying the reinforcement to the vinyl-plastic tube are described. The coefficients of expansion of vinyl plastic and the epoxy resin binders are different and so there is a risk of the tube becoming separated from its reinforcement, which could impair the effect of the reinforcement. This problem was solved by treating the surface of the vinyl plastic tube. The reinforcing layer of glass-textolite on the vinyl plastic tube is ground and polished. The new 110-kV lightning arresters with improved rupturing-capacity are similar in construction to arresters type RTV. A dimensioned sectional drawing of the arrester is given in Fig 2, and the construction is described. Experimental lightning arresters are

Card 2/4

Lightning Arresters of High Rupturing-Capacity SOV/110-59-1-7/28

tested according to the requirements of the International Electro-Technical Commission (Committee of Technical Experts, Nr 37). This test procedure differs in many ways from that usually adopted in the USSR, and the differences are briefly explained. The I.E.C. method is the more severe. Characteristics of the arrester obtained during tests at 100 kV in accordance with the I.E.C. requirements are given in Table 2. During the tests the experimental samples interrupted arc currents up to 28 - 30 KA in a single half-cycle. After interrupting current of the order of 28 - 30 KA five times, the arc suppression channel increased from 16 to 25 mm and the arrester could then no longer interrupt currents below 15 KA. In order to obtain a wider range of current interruption and to ensure the interruption of currents of less than 10 KA, the range of 110-kV arresters type RTV had to have the

Card 3/4

Lightning Arresters of High Rupturing-Capacity SOV/110-59-1-7/28

upper limit of rupturing-current limited to 20 kA.
Better arc-suppression materials than vinyl plastic
of high gas-generating properties are still required.
There are 2 figures, 2 tables, no literature references.

SUBMITTED: May 26, 1958

Card 4/4

7(7),9(6)

AUTHOR:

Bezrukov, F. V., Engineer

SOV/119-59-1-14/20

TITLE:

Fixable Magnets and Magnetic Lenses for Oscillographs With Cold Cathode (Ustanovochnyye magnity i magnitnyye linzy dlya elektronnykh ostsillografov s kholodnym katodom)

PERIODICAL:

Priborostroyeniye, 1959, Nr 1, pp 25-27 (USSR)

ABSTRACT:

Under the supervision of L. I. Ivanov (deceased) the Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Electrotechnical Institute imeni V. I. Lenin) constructed very simple fixable magnets and magnetic lenses which are not direct-current charged. Fixable magnets: They consist of 2 independent magnetic systems connected by a diamagnetic ring and shifted 90° against one another. Each of the two systems has a permanent magnet (14 . 15 . 25 mm) with a coercive force of 500 Oersted and a residual induction of 10,000 - 12,000 Gauss. The magnets are fixed in an aluminum bedding. It is also possible to cause them to revolve in steel cylinder which is provided with two notches. Brass tongs are fastened onto the two notches which support the end of the yoke. When the magnets are pivoted onto the level of the yoke the main magnetic current is connected by the yoke and thus the highest magnetic field intensity is

Card 1/3

Fixable Magnets and Magnetic Lenses for
Oscillographs With Cold Cathode

SOV/119-59-1-14/20

achieved between the pole shoes of the yoke. The pivoting of the magnets is performed over a toothed wheel gearing in the most steady way. Thus an exact adjustment of a certain magnetic field intensity is possible. This mobility permits the electrons from the anode diaphragm to be fixed at a certain point of the screen. The fixing and centration of the fixable magnets on the oscillograph is carried out by means of 4 screws. Magnetic lenses: A special separator made of diamagnetic material carries out the symmetrical distribution of 8 permanent magnets. The magnets are distributed in the separator and fixed with screws between two disk-shaped immobile yokes. In order to intensify the magnetic field intensity the inner ring-shaped poles of the immobile yoke form a small ring-shaped slot (6 mm). The variation of field intensity in this ring-shaped slot is performed by two ring-shaped mobile yokes (magnetic shunt). When the outer poles of the immobile yoke are shunted with the poles of the mobile yoke a minimum field intensity is produced in the cyclic slot of the magnetic lense. By slow shifting of the mobile yokes the field intensity in the cyclic slot of the

Card 2/3

Fixable Magnets and Magnetic Lenses for
Oscillographs With Cold Cathode

SOV/119-59-1-14/20

magnetic lense increases and a maximum is achieved at the
greatest possible distance between the mobile and immobile
parts. 8 screws center the lense on the oscillograph.
There are 3 figures.

Card 3/3

Z/019/61/018/011/005/005
D006/D102

AUTHORS: Bezrukov, F. V., Volkenau, V. A., Galkin, Yu. P., et al.

TITLE: Standard series of basic parameters of tube lightning-arresters

PERIODICAL: Přehled technické a hospodářské literatury, Energetika a elektro-
technika, v. 18, 1961, no. 11, 504, abstract # E 61-6968. Vestn.
Elektroprom. 31, December 1960, no. 12, 27-31

TEXT: The article presents a review of lightning-arrester types currently pro-
duced in the USSR, and lists additional types for 6 - 220 kV and 35-220 kV which
should be produced. The original article contains 6 tables. [Abstracter's note:
The above text is a full translation of the Czech abstract].

Card 1/1

BEZRUKOV, F.V.; GALKIN, Yu.P.

Nomenclature of tubular protective gaps. Standartizatsiia 26 no.5:43-
46 My '62. (MIRA 15:7)

(Electric protection--Nomenclature)

BEZRUKOV, F.V., inzh.; GALKIN, Yu.P., kand.tekhn.nauk; YURIKOV, P.A., inzh.

Installation of tubular dischargers. Energetik 11 no.9:10-13
S '63. (MIRA 16:10)

ACC NR: AP5028011

SOURCE CODE: UR/0386/65/002/008/0353/0356

AUTHOR: Ivanov, A. G.; Mineyev, V. N.; Novitskiy, Ye. Z.; Yanov, V. A.; Bezrukov, G. I.

ORG: none

TITLE: Anomalous polarization of sodium chloride under impact loading

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu (Prilozheniye), v. 2, no. 8, 1965, 353-356

TOPIC TAGS: sodium chloride, shock wave propagation, pressure effect, electric polarization, single crystal

ABSTRACT: The authors report results of an investigation of the polarization of single-crystal sodium chloride under impact loading perpendicular to the cleavage plane (100) in the interval of pressures (P) from 50 to 550 kbar. The impact loading was by means of the explosive devices used by L. V. Al'tshuler et al. (FTT v. 5, 279, 1963). A simple measuring circuit was used (Fig. 1). The parameters of the shock wave in the single crystal were calculated from the known state of the screen. A measuring line made of RKK-0.3/10 cable of 200 ohm wave resistance and an OK-21 oscilloscope were used in the experiments. The crystal thickness (l_0) fluctuated between 0.15 and 0.19 cm. The results of the experiments in the form of a plot of the initial current jump density (I) against the compression behind the front of the shock wave (σ) are shown in Fig. 2. Each point on the curve was obtained in a separate experiment. Shock-wave compression of polycrystalline samples of sodium chloride with initial density 2.13

Card 1/3

0901 1747

L 6479-66

ACC NR: AP5028011

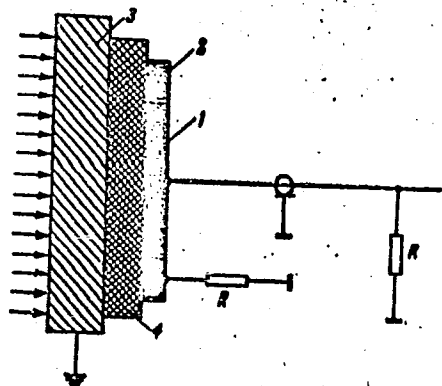


Fig. 1. Experimental setup

1 - Measuring electrode (2 cm dia.);
2 - guard ring (area equal to measuring electrode); 3 - metal screen (Al, Cu); 4 - NaCl single crystal. Arrows show direction of shock wave motion.

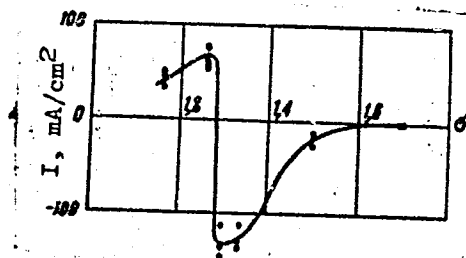


Fig. 2. Plot of $I = f(\sigma)$.

Card 2/3

U 0479-00

ACC NR: AP5028011

g/cm³ ($l_0 = 0.3$ cm, $P = 250-270$ kbar) yielded a polarization current $I = 5.5$ ma/cm². The authors found no acceptable physical explanation for the observed anomaly in the behavior of the sodium chloride (in polar crystal I increases monotonically with σ). This fact may be connected somehow with a phase transition which has not been observed hitherto under dynamic loading in the pressure range under consideration. Orig. art. has: 3 figures and 1 formula. [02]

SUB CODE: SS

SUBM DATE: 02Aug65/

ORIG REF: 005/

OTH REF: 002 /

ATD PRESS: 4140

nw

Card 3/3

BEZRUKOV, G.N.

Abdul-Kasimovo talcite deposit in the Southern Urals (Bashkir A.S.S.R.).
Trudy IGEM no.63:26-36 '61. (MIRA 14:9)
(Uchaly District--Talcite)

POSTOYEV, K.I.; BEZRUKOV, G.N.

Discovery of brachiopod and crinoidal remains in talc-chloritic rocks in the Southern Urals. Izv. AN SSSR. Ser. geol. 26 no.5: 92-95 My '61.
(MIRA 14:5)

1. Institut geologii rudnykh mestorozhdeniy petrografii, mineralogii i geokhimii AN SSSR, Moskva.
(Ural Mountains---Brachiopoda, Fossil)
(Ural Mountains---Crinoidea, Fossil)